

**CLAIMS:**

1. An ink jet printing method comprising the steps of:
  - A) providing an ink jet printer that is responsive to digital data signals;
  - B) providing an ink jet printhead comprising a nozzle array comprising a  
5 plurality of nozzles, said nozzle array being dedicated to ejecting a given ink jet  
ink composition, wherein said nozzles are 20 microns or less in diameter;
  - C) supplying said printhead with said given ink jet ink composition, said  
ink jet ink composition comprising particles wherein at least 90% by weight of  
said particles have a diameter that is less than  $1/120^{\text{th}}$  of the diameter of said  
10 nozzles; and
  - D) printing using said given ink jet ink composition in response to said  
digital data signals.
2. The ink jet printing method of claim 1 wherein said nozzles are  
15 less than 18 microns in diameter.
3. The ink jet printing method of claim 1 wherein said nozzles are  
less than 16 microns in diameter.
- 20 4. The ink jet printing method of claim 1 wherein at least 90% of  
the particles are less than  $1/150^{\text{th}}$  of the diameter of the nozzles.
5. The ink jet printing method of claim 2 wherein at least 90% of  
the particles are less than  $1/150^{\text{th}}$  of the diameter of the nozzles.  
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6. The ink jet printing method of claim 1 wherein at least 90% of  
the particles are less than  $1/200^{\text{th}}$  of the diameter of the nozzles.
7. The ink jet printing method of claim 2 wherein at least 90% of  
30 the particles are less than  $1/200^{\text{th}}$  of the diameter of the nozzles.

8. The ink jet printing method of claim 1 wherein the printhead comprises more than one nozzle array, each nozzle array being dedicated to ejecting ink of a different given ink jet ink composition, wherein each given ink jet ink composition comprises particles wherein at least 90% of the particles are  
5 less than  $1/120^{\text{th}}$  of the diameter of the nozzles of the dedicated nozzle array.

9. The ink jet printing method of claim 8 wherein the printhead comprises at least three nozzle arrays, said arrays being dedicated to ejecting cyan, yellow and magenta ink compositions respectively.  
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10. The ink jet printing method of claim 1 wherein the particles are colorant particles.

11. The ink jet printing method of claim 10 wherein the particles  
15 are pigments.

12. The ink jet printing method of claim 11 wherein the particles are cyan pigments.

13. The ink jet printing method of claim 1 wherein the printhead is provided as part of the printer.  
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14. The ink jet printing method of claim 1 wherein the printhead is provided by an ink supply system comprising an ink supply and a printhead.  
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15. The ink jet printing method of claim 1 wherein the given ink jet ink composition is ejected from the nozzles of the nozzle array in droplets having an average drop volume of 5 pL or less.

16. The ink jet printing method of claim 1 wherein the ink jet ink composition is an aqueous-based ink composition comprising a humectant and/or co-solvent.  
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17. An ink supply system comprising printed instructions directing that the ink jet supply system be used with an ink jet printer comprising an ink jet printhead comprising a nozzle array comprising a plurality of nozzles, said nozzle array being dedicated to ejecting a given ink jet ink composition, wherein the nozzles are 20 microns or less in diameter; and said ink jet supply system further comprising said given ink jet ink composition comprising particles wherein at least 90% of the particles are less than  $1/120^{\text{th}}$  of the diameter of said nozzles.
18. The ink supply system of claim 17 wherein said nozzles are less than 18 microns in diameter.
19. The ink supply system of claim 17 wherein said nozzles are less than 16 microns in diameter.
20. The ink supply system of claim 17 wherein at least 90% of the particles are less than  $1/150^{\text{th}}$  of the diameter of said nozzles.
21. The ink supply system of claim 17 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.
22. The ink supply system of claim 18 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.
23. The ink supply system of claim 17 wherein the printhead comprises more than one nozzle array, each nozzle array being dedicated to ejecting ink of a different given ink jet ink composition, wherein each given ink jet ink composition comprises particles wherein at least 90% of the particles are less than  $1/120^{\text{th}}$  of the diameter of the nozzles of the dedicated nozzle array.

24. The ink supply system of claim 23 wherein the printhead comprises at least three nozzle arrays, said arrays being dedicated to ejecting a cyan, yellow and magenta ink compositions respectively.

5                    25. The ink supply system of claim 17 wherein the particles are pigments.

26. The ink supply system of claim 25 wherein the particles are cyan pigments.

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27. The ink supply system of claim 17 wherein the ink jet ink composition further comprises an aqueous-based ink composition comprising a humectant and/or co-solvent.

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28. The ink supply system of claim 17 wherein said instructions are on the packaging of the supply system.

29. The ink supply system of claim 17 wherein said instructions are on the ink supply.

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30. The ink supply system of claim 17 wherein said instructions are on a printed sheet sold with the ink supply system.

25                    31. The ink supply system of claim 17 wherein said instructions are in a source remote from the ink supply system.

32. An ink jet ink supply system comprising an integrated ink jet ink supply and a printhead, wherein said printhead comprises a nozzle array comprising a plurality of nozzles, said nozzle array being dedicated to ejecting a given ink jet ink composition, wherein said nozzles are 20 microns or less in diameter; and wherein said ink jet ink supply further comprises the given ink jet

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ink composition comprising particles wherein at least 90% of the particles are less than  $1/120^{\text{th}}$  of the diameter of said nozzles.

5                    33. The ink supply system of claim 32 wherein said nozzles are less than 18 microns in diameter.

34. The ink supply system of claim 32 wherein said nozzles are less than 16 microns in diameter.

10                    35. The ink supply system of claim 32 wherein at least 90% of the particles are less than  $1/150^{\text{th}}$  of the diameter of said nozzles.

15                    36. The ink supply system of claim 32 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.

37. The ink supply system of claim 33 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.

20                    38. The ink supply system of claim 32 wherein the printhead comprises more than one nozzle array, each nozzle array being dedicated to ejecting ink of a different given ink jet ink composition, wherein each given ink jet ink composition comprises particles wherein at least 90% of the particles are less than  $1/120^{\text{th}}$  of the diameter of the nozzles of the dedicated nozzle array.

25                    39. The ink supply system of claim 38 wherein the printhead comprises at least three nozzle arrays, said arrays being dedicated to ejecting a cyan, yellow and magenta ink compositions respectively.

30                    40. The ink supply system of claim 32 wherein the particles are pigments.

41. The ink supply system of claim 40 wherein the particles are cyan pigments.

42. The ink supply system of claim 32 wherein the ink jet ink composition further comprises an aqueous-based ink composition comprising a humectant and/or co-solvent.

43. An ink jet printer comprising a printhead and an ink jet ink supply, wherein said printhead comprises a nozzle array comprising a plurality of nozzles, said nozzle array being dedicated to ejecting a given ink jet ink composition, wherein said nozzles are 20 microns or less in diameter; and wherein said ink jet ink supply further comprises the given ink jet ink composition comprising particles wherein at least 90% of the particles are less than  $1/120^{\text{th}}$  of the diameter of said nozzles.

44. The printer of claim 43 wherein said nozzles are less than 18 microns in diameter.

45. The printer of claim 43 wherein said nozzles are less than 16 microns in diameter.

46. The printer of claim 43 wherein at least 90% of the particles are less than  $1/150^{\text{th}}$  of the diameter of said nozzles.

47. The printer of claim 43 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.

48. The printer of claim 47 wherein at least 90% of the particles are less than  $1/200^{\text{th}}$  of the diameter of said nozzles.

49. The printer of claim 43 wherein the printhead comprises more than one nozzle array, each nozzle array being dedicated to ejecting ink of a

different given ink jet ink composition, wherein each given ink jet ink composition comprises particles wherein at least 90% of the particles are less than 1/120<sup>th</sup> of the diameter of the nozzles of the dedicated nozzle array.

5                    50. The printer of claim 49 wherein the printhead comprises at least three nozzle arrays, said arrays being dedicated to ejecting a cyan, yellow and magenta ink compositions respectively.

10                    51. The printer of claim 43 wherein the particles are pigments.

52. The printer of claim 51 wherein the particles are cyan pigments.

15                    53. The printer of claim 43 wherein the ink jet ink composition further comprises an aqueous-based ink composition comprising a humectant and/or co-solvent.

20                    54. A method of replenishing the ink supply to a printer comprising a printhead comprising a nozzle array comprising a plurality of nozzles, said nozzle array being dedicated to ejecting a given ink jet ink composition, wherein said nozzles are 20 microns or less in diameter; said method comprising taking an ink supply comprising said given ink jet ink composition comprising particles wherein at least 90% of the particles are less than 1/120<sup>th</sup> of the diameter of said nozzles and replenishing the ink supply of the printer.

25                    55. The method of claim 1 wherein the printhead is a thermal printhead.

30                    56. The ink supply system of claim 17 wherein the printhead is a thermal printhead.

57. The ink supply system of claim 32 wherein the printhead is a thermal printhead.

58. The printer of claim 43 wherein the printhead is a thermal  
5 printhead.